

AMENDMENTS TO THE SPECIFICATION

IN THE SUBSTITUTE SPECIFICATION

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Please replace the paragraph beginning at page 5, line 13, with the following rewritten paragraph.

-- Fig. 3 is a fragmentary ~~cross-sectional~~ cross-sectional view illustrating another embodiment of a thin film semiconductor device according to this invention;--

Please replace the paragraph beginning at page 5, line 17, with the following rewritten paragraph.

-- Fig. 5 is a schematic ~~cross-sectional~~ cross-sectional view illustrating an electroluminescence display device according to this invention. --

Please replace the paragraph beginning at page 5, line 20, with the following rewritten paragraph.

-- Preferred embodiments of this invention are to be described in detail with reference to the drawings. Figs. 1A and 1B are an example of schematic step charts illustrating a method of manufacturing a thin film semiconductor device according to this invention. At first, as shown in Fig. 1A, a manufacturing substrate 20 having characteristics durable to the process for forming a thin film transistor and a product substrate 1 having characteristics suitable to direct mounting of a thin film transistor are prepared. In the preparatory step, a manufacturing substrate 20, for example, made of an inorganic material, such as glass, and a product substrate 1 made of an organic material, such as plastic, are prepared. In this embodiment, non-alkali glass is used as the manufacturing

substrate 20. The heat resistance of the non-alkali glass is about 500°C. The standard thickness for the manufacturing substrate 20 is, for example, 0.7 mm. If it is reduced to 0.5 mm, there is no particular problem in view of the manufacturing process. In this embodiment, non-alkali glass is used but, instead, metal plate, such as of stainless steel, plastic plate, quartz and the like, can be also be used. On the other hand, for the product substrate 1, it is necessary to have a heat resistance capable of withstanding the processing temperature of a thin film transistor, and it is necessary that the substrate is thinner and lighter compared with the manufacturing substrate 20. In this embodiment, a plastic material is used with a thickness from about 0.1 mm to 0.5 mm. Particularly, polyether sulfone resin (PES), polyethylene terephthalate resin or ARTON resin of excellent heat resistance is used. The polyether sulfone resin has a heat resistance as high as about 250 °C (ARTON is a trademark of Japan Synthetic Rubber Co. Ltd.). The plastic film used for the manufacturing-product substrate 1 may be a single layer and, depending on the case, has a laminate structure. Particularly, when this is used for a reflection type display and not a transmission type display, a metal plate can be used instead of the plastic material. However, when the metal plate is used, the surface has to be insulated. For example, when an aluminum plate is used for the product substrate 1, the surface has to be previously covered with alumina. --

Please replace the paragraph beginning at page 7, line 16, with the following rewritten paragraph.

-- Successively, as shown in Fig. 1A, the manufacturing substrate 20 is bonded to the product substrate 1 in order to support the product substrate 1 at the back. In the bonding step, the manufacturing substrate 20 is bonded to the product substrate 1 by using an adhesive 21 coated, for example, in a releasable state. In this embodiment, a heat resistant resin is coated as the adhesive 21. Since the resin has to endure heat upon forming the thin film transistor, a polyimide, silicon or Teflon/TEFLON-type resin is used (TEFLON is a trademark of DuPont). However, when the processing temperature for the thin film transistor is lowered, various adhesives can be used. Coating is conducted by spin coating or printing a liquid material. Instead, there is a method of appending a film-shaped adhesive to one of the substrate surfaces and then coating by heat melting

the same. The adhesive 21 is not restricted only to organic material, but silicon, germanium and, further, metal (lead, aluminum, molybdenum, nickel or tin) may also be used. When such a material is used, it is formed as a film by a sputtering or the like to one of the substrates and bonded to the other of the substrates while being melted under laser irradiation or the like. In the case of using an aluminum plate as the product substrate 1, a product substrate 1 made of aluminum or the like and a manufacturing substrate 20 made of glass can be bonded directly by using optical energy, such as that of laser. --

Please replace the paragraph beginning at page 9, line 9, with the following rewritten paragraph.

-- Finally, as shown in Fig. 2, a separation step of separating the used manufacturing substrate 20 from the ~~productivity~~ product substrate 1 is applied. Specifically, both of the substrates can be separated by dissolving adhesives interposed between the manufacturing substrate 20 and the product substrate 1 in a solvent. The solvent used is different depending on the material of the adhesives. Generally, the adhesive layer is extremely thin and takes much time ~~until~~ until the solvent intrudes. Then, it is effective to promote the dissolution of the adhesives by using energy, such as supersonic waves or laser beams. In the previous bonding step, it is not necessary to uniformly coat the adhesive over the entire surface of the substrate. Rather, dissolution using the solvent is facilitated by coating the adhesives discretely. As described above, since only the product substrate 1 made of the plastic material or the like is left to the final product, a display light in weight and reduced in the thickness can be obtained. In the case of preparing a liquid crystal display, the assembling step described above may be applied after separation of the manufacturing substrate 20. --

Please replace the paragraph beginning at page 9, line 25, with the following rewritten paragraph.

-- In the embodiment described above, a thin film transistor of the bottom gate structure has been formed on the product substrate 1. Instead, a thin film transistor of a top gate structure may also be integrated and formed. Fig. 3 shows this embodiment. For easy understanding, corresponding reference numerals are attached to those portions corresponding to the previous embodiment shown in Fig. 1 and Fig. 2. As shown in the drawing, in the thin film transistor of the top gate structure, the gate electrode 5 is formed by way of the gate insulation film 4 on the semiconductor thin film 2. In this embodiment, a moisture proof buffer film 30 is formed ~~previously~~ between the product substrate 1 and the thin film transistor. The buffer film 30 comprises a silicon oxide film or a silicon nitride film formed by a chemical vapor deposition (CVD) or sputtering method, which stops water passing through the product substrate 1 and suppresses impurities from intruding into the product substrate 1. In the case of using a plastic material for the product substrate 1, it is sometimes preferred to form a buffer film particularly as a moisture proof countermeasure. --

Please replace the paragraph beginning at page 12, line 6, with the following rewritten paragraph.

-- As has been described above, this invention comprises a structure in which a manufacturing substrate having the characteristic of being able to endure ~~durable to~~ the process for forming the thin film transistor and ~~a product~~ a product substrate having the characteristic of being suitable to direct mounting of the thin film transistor are used, the manufacturing substrate is bonded to the product substrate for supporting the product substrate at the back, at least the thin film transistor is formed on the surface of the product substrate in a state reinforced with the manufacturing substrate, and the manufacturing substrate after use is separated from the product substrate. In the manufacturing steps, since the thin film transistor is integrated and formed on the substrate reinforced with bonding, handling for the substrate, etc. can be facilitated to contribute to the stabilization of the process. On the other hand, since the manufacturing substrate after use is separated in a stage where the product is completed, the product itself is reduced in weight and

thickness. In addition, the separated manufacturing substrate can further be utilized again in the thin film transistor manufacturing process, making it possible for recycling of resources. --